

REMARKS

This Amendment addresses the issues raised by the Examiner in the Office Action dated March 14, 2006. Initially, Applicants would like to thank the Examiner for the careful consideration given this case. In view of the above amendments and the following remarks, Applicants feel that all outstanding issues have been addressed, and prompt allowance of all remaining claims is respectfully requested.

Information Disclosure Statement

The Examiner initially requested an Information Disclosure Statement to include certain references described in the specification. An Information Disclosure Statement will be filed when the Nikkei article, mentioned on page 3 of the specification, has been received from Applicant.

Objection to the Drawings

The Examiner next objected to the drawings and/or specification. Specifically, the Examiner objected to Fig. 31 purportedly because the reference numeral "310" did not appear in the specification. In fact, the Examiner is incorrect as reference numeral 310 is referenced in paragraph [75] of the specification. This objection is therefore improper, and Applicants respectfully request that it be withdrawn.

Objections to the Specification

The Examiner also indicated several objections to various portions of the specification. Through the above amendments, the specification has been corrected. Specifically, the descriptions of Figs. 1, 3, 8, 9, 10, 12 and 15 and the Abstract have been updated. Claim 3 has been cancelled without prejudice as to its reintroduction into this or a related application in order to moot the Examiner's final objection to the specification. No new matter has been inserted into this prosecution by these ministerial and typographical amendments.

Claim Objections

The Examiner also indicated several objections to the claims. Specifically, the Examiner indicated four antecedent basis problems within Claim 1. Each of these objections has been addressed through the above amendments.

Claim Rejections – 35 U.S.C. §112

The Examiner rejected Claim 3 under 35 U.S.C. §112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which Applicant regards as the invention. As described above, Claim 3 has been cancelled without prejudice.

Claim Rejections 35 U.S.C. §103

The Examiner rejected Claims 1-3 under 35 U.S.C. §103(a) as being unpatentable over U.S. Patent No. 5,963,385 to Takada et al. (“Takada”) in view of the Applicant-admitted prior art. Specifically, the Examiner argued that Fig. 15 of Takada teaches or suggests the majority of the claim limitations with the exception of the flattening of the magnetic head by the air bearing surface. Respectfully, Applicants disagree with the Examiner’s characterization of Takada.

The presently claimed invention includes the step of forming magnetic shields wherein at least a magnetic shield part is formed on the basic surface of the magnetic head opposite the medium, and wherein a height (24) of the magnetic shield (23) is less than the distance from the air bearing surface of the MR element. See Claim 1. Some representative advantages of such a configuration are clearly set forth in the specification:

[T]he height of the magnetic shields 23, i.e. their height 24 from the air bearing surface 26, is preferably kept less than the distance 25 between the air bearing surface 26 and the magnetic flux detecting element 21. As a result, the area in which the flux guide 22 and the magnetic shields 23 are closest to each other is smaller than in the conventional structure (Fig. 18) which may result in a reduced outflow of magnetic fluxes from the flux guide 22.

See Specification at paragraph [50] (emphasis added).

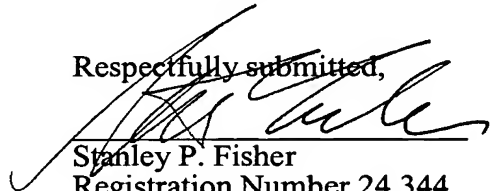
Neither Takada, nor the prior art described within the present application teaches or suggests that a height of the magnetic shields 116 is less than the distance from the air bearing surface to the MR element. In fact, in the Examiner’s analysis related to Fig. 15 of Takada is incorrect. In the present invention, as shown in Fig. 2, the height of the magnetic shields (24) is clearly less than the distance from the air bearing surface to the MR head (25). However, looking at Fig. 15 of Takada, the “height of the magnetic shields” is the distance

from the air bearing surface (ABS) to the top of the shields (116). Moreover, the “distance from the air bearing surface to the MR head” is shown to be much smaller than the height of the magnetic shields. This is, in fact, the opposite of the presently claimed invention and represents a simple example of the prior art – art upon which the present invention has improved.

New Claim 4 has been presented in order to more particularly distinguish the present invention from the cited prior art. This amendment is supported throughout the specification (see, e.g., Fig. 2) and no new matter has been inserted into the prosecution by this amendment.

The above claim amendments and accompanying remarks address each and every concern raised by the Examiner in the Office Action. Applicants believe that all remaining claims of the present invention are now in condition for final allowance. If the Examiner feels that any issues remain outstanding, the Examiner is encouraged to contact Applicants’ attorney at the contact information below.

Respectfully submitted,



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Substitute Abstract

Magnetic heads capable of recording and reading with high sensitivity and resolution are provided by minimizing the outflow of magnetic fluxes from a flux guide to magnetic shields while using a flux guide structure for an MR element. In the magnetic head, magnetic shields exposed on a surface opposite a magnetic recording medium (air bearing surface) and a flux guide exposed between the magnetic heads via a non-magnetic layer are provided, and magnetic fluxes are guided by the flux guide to a magnetoresistive (MR) element formed in a position not exposed on the air bearing surface. The height of the magnetic shields in a direction perpendicular to the air bearing surface is less than the distance from the air bearing surface to the MR element.